FACT SHEET

as required by LAC 33:IX.3111 for major LPDES facilities, for draft **Louisiana Pollutant Discharge Elimination System Permit No. LA0020257; AI 19907; PER20090002** to discharge to waters of the **State of Louisiana** as per LAC 33:IX.2311.

The **permitting authority** for the Louisiana Pollutant Discharge Elimination System (LPDES) is:

Louisiana Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

I. **THE APPLICANT IS:** City of Bunkie
City of Bunkie Wastewater Treatment Plant
P.O. Box 630
Bunkie, Louisiana 71322

II. **PREPARED BY:** Darlene Bernard

DATE PREPARED: February 9, 2010

III. **PERMIT ACTION:** reissue LPDES permit LA0020257, AI 19907; PER20090002

LPDES application received: July 31, 2009

Previous LPDES permit effective: February 1, 2005
Previous LPDES permit expired: January 31, 2010

IV. **FACILITY INFORMATION:**

A. The application is for the discharge of treated sanitary wastewater from a publicly owned treatment works serving the City of Bunkie.

B. The permit application does not indicate the receipt of industrial wastewater.

C. The facility is located at 656 East Oak Street, in Bunkie, Avoyelles Parish.

D. The treatment process consists of a bar screen with grit removal through a grit chamber to oxidation ditches then to final clarifiers with chlorination and dechlorination.

E. Outfall 001

Discharge Location: Latitude 30° 57' 37" North
Longitude 92° 10' 44" West

Description: treated sanitary wastewater

Design Capacity: 1.00 MGD

Type of Flow Measurement which the facility is currently using:

Totalizer

V. RECEIVING WATERS:

The discharge is into an unnamed ditch, thence into Bayou Dulac, thence into Bayou Des Glaises in Subsegment 060212 of the Vermilion-Teche River Basin. This segment is not listed on the 303(d) list of impaired waterbodies.

The **critical low flow** (7Q10) of Bayou Dulac is 0 cfs. In accordance with Implementation Policy, when the critical low flow equals 0 cfs, 0.1 cfs will be used as the 7Q10 flow and 1 cfs will be used as the harmonic mean flow.

The **hardness value** is 118.8 mg/l and the **fifteenth percentile value for TSS** is 21.7 mg/l.

The designated uses and degree of support for Subsegment 060212 of the Vermilion-Teche River Basin are as indicated in the table below[1/]:

Overall Degree of Support for Segment	Degree of Support of Each Use						
Partial	Primary Contact Recreation	Secondary Contact Recreation	Propagation of Fish & Wildlife	Outstanding Natural Resource Water	Drinking Water Supply	Shell fish Propagation	Agriculture
	Not Supporting	Full	Not Supporting	N/A	N/A	N/A	N/A

[1/] The designated uses and degree of support for Subsegment 060212 of the Vermilion-Teche River Basin are as indicated in LAC 33:IX.1123.C.3, Table (3) and the 2006 Water Quality Management Plan, Water Quality Inventory Integrated Report, Appendix A, respectively.

VI. ENDANGERED SPECIES:

The receiving waterbody, Subsegment 060212 of the Vermilion-Teche River Basin, is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated January 5, 2010 from Rieck (FWS) to Nolan (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

VII. HISTORIC SITES:

The discharge is from an existing facility location, which does not include an expansion beyond the existing perimeter. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the 'Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits' no consultation with the Louisiana State Historic Preservation Officer is required.

VIII. PUBLIC NOTICE:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit modification and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation
Office of Environmental Services Public Notice Mailing List

For additional information, contact:

Ms. Darlene Bernard
Permits Division
Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

IX. PROPOSED PERMIT LIMITS:

Subsegment 060212, Chatlin Lake Canal and Bayou Dulac-From Alexandria to Bayou des Glaises Diversion Canal; includes a portion of Bayou DeGlaises was listed on the court ordered 303(d) list of impaired waterbodies. The suspected causes of impairment are Suspended solids/turbidity/siltation, Pathogen indicators, Organic Enrichment/low DO, Nitrate + Nitrite as N and Phosphorus. EPA approved three TMDLs for subsegment 060212. They are as follows: Chatlin Lake Canal Bayou Dulac and Bayou Des Glaises DO and Nutrients TMDL on May 2, 2002; TMDL for TSS, Turbidity and Siltation for the Bayou Teche Watershed on May 2, 2002, and Chatlin Lake and Bayou Dulac TMDL for Fecal Coliform on April 25, 2003. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by any future TMDLs.

A water quality screen was performed using the reported ammonia-nitrogen from DMRs over the past three years. The Ammonia-nitrogen chronic criteria was set at 4 mg/l. The screen indicated that this facility does not have the reasonable potential to discharge NH_3-N at levels to cause concern. Therefore, the reporting requirement for ammonia-nitrogen has been removed from this permit.

Suspended solids/Turbidity/Siltation

As per theTMDL, "Point sources do not represent a significant source of TSS as defined in this TMDL. Point sources discharge primarily organic TSS, which does not contribute to habitat impairment resulting from sedimentation. Because the point sources are minor contributors and discharges of organic suspended solids from point sources are already addressed by LDEQ through their permitting of point sources to maintain water quality standards for DO, the wasteload allocations for point source contributions were set to zero. This TMDL only addresses the landform contribution of TSS/sediment and does not address the insignificant point source contributions." Monitoring for total suspended solids (TSS) in wastewater is an effective indicator of the potential presence of suspected solids in a facility's effluent. To protect against the potential for the introduction of suspended solids into the receiving waterbodies, TSS limits have been established in the permit.

Organic enrichment/low DO-Nutrients

As per the TMDL, the projection modeling used to develop the TMDLs showed that nonpoint source (NPS) loads need to be reduced an average of 47% in subsegment 060212 and an average of 58% in subsegment 060207 to maintain the DO standard during the critical period. Reductions of point source oxygen demand were also required. In subsegment 060212, $CBOD_5$ permit limits for the Town of Lecompte STP and Allen Canning were reduced. In subsegment 060207, $CBOD_5$ and ammonia nitrogen limits for the Village of Moreauville STP and $CBOD_5$ limit for the Town of Cottonport were reduced. No changes in permit limits were assumed for the other point source discharges in the study area. Because of their small discharge flows, these discharges did not have as great an effect on the stream DO concentrations. The City of Bunkie was not one of the point source discharges included in the wasteload allocation requiring reductions, therefore, no load reductions from the current permit limits are required in this permit.

Fecal Coliform

As per the TMDL, "The Louisiana Water Quality Regulations require permitted point source discharges of treated sanitary wastewater to maintain a fecal coliform count of 200cfu/100ml in their effluent, i.e., they must meet the standard at end-of-pipe. Therefore, there will be no change in the permit requirements based upon a wasteload allocation resulting from this TMDL".

Interim Effluent Limits:

OUTFALL 001

An interim period is proposed to allow the facility time to attain compliance with the WET limit and the WQBL for chloroform.

Interim limits shall become effective on the effective date of the permit and last through three years from the effective date of the permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
BOD_5	83.4	10 mg/l	15 mg/l	Limits are set in accordance with the Statewide Sanitary Effluent Limitations Policy (SSELP) for facilities of this treatment type and size and previous permit conditions.

Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
TSS	125.1	15 mg/l	23 mg/l	Since there are no numeric water quality criterion for TSS, and in accordance with the current Water Quality Management Plan, the TSS effluent limitations shall be based on a case-by-case evaluation of the treatment technology being utilized at a facility. Therefore, a Technology Based Limit has been established through Best Professional Judgement for the type of treatment technology utilized at this facility.
Dissolved Oxygen		5 mg/$l_{(min)}$	N/A	Previous permit limit

Priority Pollutants

A water quality screen was performed using the data provided in the permit application. The water quality screen indicated a need for water quality based Chloroform effluent limitations of 0.96 lbs/day monthly average and 2.28 lbs/day daily maximum based upon design capacity of 1.0 MGD. In order to allow facility sufficient time to meet the Chloroform limitation, report is being proposed for this interim period of the permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Daily Maximum (lbs/day)	Basis
Chloroform	Report	Report	Water Quality Based Limit. See Appendix B-1 for further details. In order to allow the facility sufficient time to meet the chloroform limitation, report is being proposed for this interim period.

The above draft priority pollutant limits for Chloroform are based upon the evaluation of one effluent analysis. The permittee may conduct and submit the results of three (3) or more additional effluent analyses to either refute or substantiate the presence of the above toxic pollutant during the Draft Permit comment period. The additional analyses will be evaluated by this Office to determine if the pollutant is potentially in the effluent and if it potentially exceeds the State's water quality standards.

Other Effluent Limitations:

1) **Fecal Coliform**

The discharge from this facility is into a water body which has a designated use of Primary Contact Recreation. According to LAC 33:IX.1113.C.5.a, the fecal coliform standards for this water body are 200/100 ml and 400/100 ml. Therefore, the limits of 200/100 ml (Monthly Average) and 400/100 ml (Weekly Average) are proposed as Fecal Coliform limits in the permit. These limits are being proposed through Best Professional Judgement in order to ensure that the water body standards are not exceeded, and due to the fact that existing facilities have demonstrated an ability to comply with these limitations using present available technology.

2) **pH**

According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time.

3) **Solids and Foam**

There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

Final Effluent Limits:

OUTFALL 001

Final limits shall begin three years from the effective date of permit and last through the expiration date of the permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
BOD_5	83.4	10 mg/l	15 mg/l	Limits are set in accordance with the Statewide Sanitary Effluent Limitations Policy (SSELP) for facilities of this treatment type and size and the previous permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
TSS	125.1	15 mg/l	23 mg/l	Since there are no numeric water quality criterion for TSS, and in accordance with the current Water Quality Management Plan, the TSS effluent limitations shall be based on a case-by-case evaluation of the treatment technology being utilized at a facility. Therefore, a Technology Based Limit has been established through Best Professional Judgement for the type of treatment technology utilized at this facility.
Dissolved Oxygen	N/A	5 min.	N/A	Previous permit limit

A water quality screen was performed using the data provided in the permit application. The water quality screen indicated a need for water quality based Chloroform effluent limitations of 0.96 lbs/day monthly average and 2.28 lbs/day daily maximum based upon design capacity of 1.0 MGD. Therefore, limitations for Chloroform will be included in this permit.

Effluent Characteristic	Monthly Avg. (lbs./day)	Daily Maximum (lbs/day)	Basis
Chloroform	0.96	2.28	Water Quality Based Limit. See Appendix B-1 for further details.

Other Effluent Limitations:

1) **Fecal Coliform**

The discharge from this facility is into a water body which has a designated use of Primary Contact Recreation. According to LAC 33:IX.1113.C.5.a, the fecal coliform standards for this water body are 200/100 ml and 400/100 ml. Therefore, the limits of 200/100 ml (Monthly Average) and 400/100 ml (Weekly Average) are proposed as Fecal Coliform limits in the permit. These limits are being proposed through Best Professional Judgement in order to ensure that the

water body standards are not exceeded, and due to the fact that existing facilities have demonstrated an ability to comply with these limitations using present available technology.

2) **pH**

According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time.

3) **Solids and Foam**

There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

Toxicity Characteristics

In accordance with EPA's Region 6 Post-Third Round Toxics Strategy, permits issued to treatment works treating domestic wastewater with a flow (design or expected) greater than or equal to 1 MGD shall require biomonitoring at some frequency for the life of the permit or where available data show reasonable potential to cause lethality, the permit shall require a whole effluent toxicity (WET) limit (*Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards*, October 7, 2009 VERSION 7). Whole effluent toxicity testing is the most direct measure of potential toxicity which incorporates the effects of synergism of the effluent components and receiving stream water quality characteristics.

Based on information contained in the permit application and a review of biomonitoring test results required by the previous permit, LDEQ has determined there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream in violation of Section 101(a)(3) of the Clean Water Act. Testing since the issuance of the previous permit has demonstrated 3 lethal and 9 sub-lethal test failures for Ceriodaphnia dubia and 1 lethal and 3 sub-lethal test failures for Pimephales promelas. A WET limit is established in the proposed permit to meet narrative criteria which, in part, states that "No substances shall be present in the waters of the State or the sediments underlying said waters in quantities alone or in combination will be toxic to human, plant, or animal life ..." (LAC 33:IX.1113.B.5)

The biomonitoring procedures stipulated as a condition of this permit are as follows:

The permittee shall submit the results of any biomonitoring testings performed in accordance with the LPDES Permit No. LA0020257, **Biomonitoring Section** for the organisms indicated below.

TOXICITY TESTS	FREQUENCY
Chronic static renewal 7-day survival & reproduction test Using Ceriodaphnia dubia (Method 1002.0)	1/quarter
Chronic static renewal 7-day survival & growth test using fathead minnow (Pimephales promelas) (Method 1000.0)	1/quarter

Dilution Series - The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional concentrations shall be 30%, 40%, 53%, 70%, and 94%. The biomonitoring critical dilution and WET Limit is defined as 94% effluent. The critical dilution is

calculated in Appendix B-1 of this fact sheet. Results of all dilutions shall be documented in a full report according to the test method publication mentioned in the **Biomonitoring Section** under Whole Effluent Toxicity. This full report shall be submitted to the Office of Environmental Compliance as contained in the Reporting Paragraph located in the **Biomonitoring Section** of the permit.

X. PREVIOUS PERMITS:

LPDES Permit No. LA0033430: Effective: February 1, 2005
Expired: January 31, 2010

Effluent Characteristic	Discharge Limitations Monthly Avg.	Monthly Avg.	Weekly Avg.	Monitoring Requirements Measurement Frequency	Sample Type
Flow	---	Report	Report	Continuous	Recorder
$CBOD_5$	83.4 lbs/day	10 mg/l	15 mg/l	1/week	3 Hr Composite
TSS	125.1 lbs/day	15 mg/l	23 mg/l	1/week	3 Hr Composite
Ammonia-Nitrogen	Report	Report	Report	1/quarter	3 Hr. Composite
Dissolved Oxygen	---	5 mg/l		1/week	Grab
Fecal Coliform Colonies/100 ml	---	200	400	1/week	Grab
pH	Range (6.0 su – 9.0 su)			1/week	Grab
Biomonitoring					
Pimephales promelas	--- Report	Report	---	1/quarter	24 Hr Comp
Ceriodaphnia dubia	--- Report	Report	---	1/quarter	24 Hr Comp

The permit contains biomonitoring.
The permit contains pollution prevention language.
The permit contains pretreatment option 1 language.

XI. ENFORCEMENT AND SURVEILLANCE ACTIONS:

A) Inspections

A review of the files indicates the following most recent inspections performed for this facility.

Date – September 8, 2008
Inspector - LDEQ
Findings and/or Violations –

Hurricane Assessment Inspection was performed to assess the damage caused by Hurricane Gustav. Facility lost power for approximately 8 hours. There was no flooding at facility. There was no release from equipment/tanks/etc. Facility was operating at the time of inspection.

B) Compliance and/or Administrative Orders

A review of the files indicates that no recent enforcement actions have been administered against this facility.

C) **DMR Review**

A review of EDMS revealed the following information from Discharge Monitoring Reports from January, 2008 to December, 2009:

Date	Parameter	Permit Limit	Reported Value
01-08	TSS (weekly avg.)	23 mg/l	28 mg/l
09-08	$CBOD_5$ (weekly avg.)	15 mg/l	18 mg/l
10-09	TSS (monthly avg.)	15 mg/l	16 mg/l
	TSS (weekly avg.)	23 mg/l	31 mg/l

XII. ADDITIONAL INFORMATION:

The Louisiana Department of Environmental Quality (LDEQ) reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional water quality studies and/or TMDL's. The LDEQ also reserves the right to modify or revoke and reissue this permit based upon any changes to established TMDL's for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as requested by the permittee and/or as necessary to achieve compliance with water quality standards. Therefore, prior to upgrading or expanding this facility, the permittee should contact the Department to determine the status of the work being done to establish future effluent limitations and additional permit conditions.

This permit may be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitations issued or approved under sections 301(b)(2)(c) and (D); 304(b)(2); and 307(a)(2) of the Clean Water Act, if the effluent standard or limitations so issued or approved:

a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

b) Controls any pollutant not limited in the permit; or

c) Requires reassessment due to change in 303(d) status of waterbody; or

d) Incorporates the results of any total maximum daily load allocation, which may be approved for the receiving waterbody.

Final effluent loadings (i.e. lbs/day) have been established based upon the permit limit concentrations and the design capacity of 1.0 MGD.

Effluent loadings are calculated using the following example:

$CBOD_5$: 8.34 gal/lb x 1.0 MGD x 10 mg/l = 83.4 lbs/day

The Monitoring Requirements, Sample Types, and Frequency of Sampling for the facility are described

below:

Effluent Characteristics		Monitoring Requirements Measurement Frequency	Sample Type
Flow		Continuous	Recorder
BOD_5		1/week	3 Hr. Composite
Total Suspended Solids		1/week	3 Hr. Composite
Chloroform		1/quarter	24 Hr. Composite
Dissolved Oxygen		1/week	Grab
Fecal Coliform Bacteria		1/week	Grab
pH		1/week	Grab
Biomonitoring	Ceriodaphnia dubia	1/quarter	24 Hr. Composite
	Pimephales promelas	1/quarter	24 Hr. Composite

Pretreatment Requirements

Based upon consultation with LDEQ pretreatment personnel, LDEQ Option1 Pretreatment Language is required for this facility.

Pollution Prevention Requirements

The permittee shall institute or continue programs directed towards pollution prevention. The permittee shall institute or continue programs to improve the operating efficiency and extend the useful life of the facility. The permittee will complete an annual Environmental Audit Report **each year** for the life of this permit according to the schedule below. The permittee will accomplish this requirement by completing an Environmental Audit Form which has been attached to the permit. All other requirements of the Municipal Wastewater Pollution Prevention Program are contained in Part II of the permit.

The audit evaluation period is as follows:

Audit Period Begins	Audit Period Ends	Audit Report Completion Date
Effective Date of Permit	12 Months from Audit Period Beginning Date	3 Months from Audit Period Ending Date

Stormwater Discharges

Because the design flow of the City of Bunkie Wastewater Treatment Plant is equal to or greater than 1.0 MGD and in accordance with LAC 33:IX.2511.B.14.i, the facility may contain storm water discharges associated with industrial activity. Therefore, in accordance with LAC 33:IX.2511.A.1.b, specific requirements addressing stormwater discharges will be included in the discharge permit.

XIII TENTATIVE DETERMINATION:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in this Statement of Basis.

XIV REFERENCES:

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 8, "Wasteload Allocations / Total Maximum Daily Loads and Effluent Limitations Policy," Louisiana Department of Environmental Quality, 2009.

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 5, "Water Quality Inventory Section 305(b) Report," Louisiana Department of Environmental Quality, 2006.

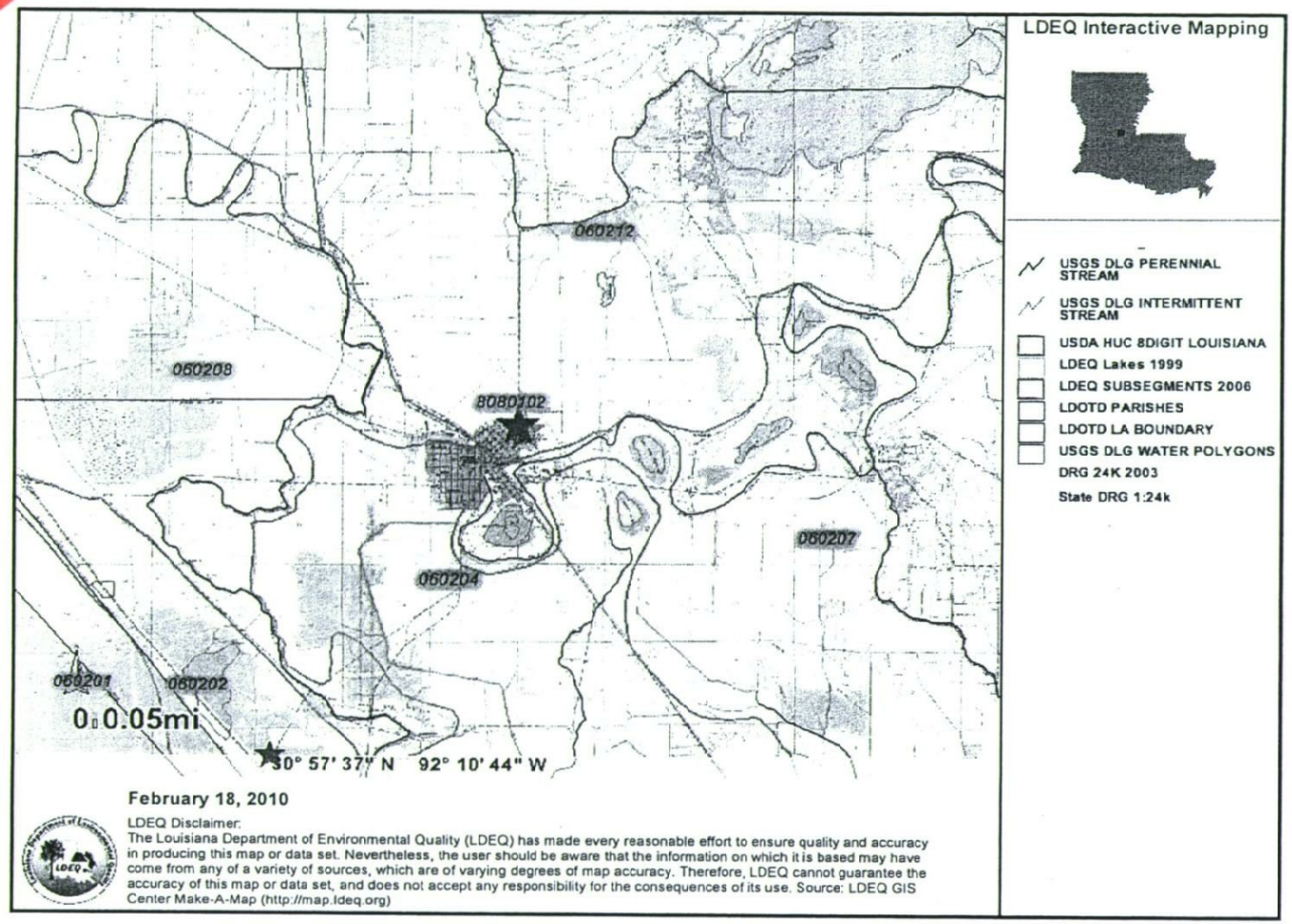
Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 11 - "Louisiana Surface Water Quality Standards", Louisiana Department of Environmental Quality, 2009.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Subpart 2 - "The LPDES Program", Louisiana Department of Environmental Quality, 2009.

Low-Flow Characteristics of Louisiana Streams, Water Resources Technical Report No. 22, United States Department of the Interior, Geological Survey, 1980.

Index to Surface Water Data in Louisiana, Water Resources Basic Records Report No. 17, United States Department of the Interior, Geological Survey, 1989.

LPDES Permit Application to Discharge Wastewater, City of Bunkie, City of Bunkie Wastewater Treatment Plant, July 31, 2009.



MEMORANDUM

TO: Darlene Bernard

FROM: Todd Franklin

DATE: December 9, 2009

RE: Stream Flow and Water Quality Characteristics for an unnamed drainage ditch and Bayou DuLac, receiving waters for the City of Bunkie Wastewater Treatment Plant (Permit No. LA0020257, AI 19907)

The discharge from Outfall 001 flows into an unnamed ditch for approximately 2.4 miles; thence into Bayou DuLac. Ambient data for hardness and TSS was taken from ambient monitoring station #0672 (Chatlin Lake Canal and Bayou DuLac southeast of Mansura). The following results were obtained:

Average hardness	=	118.8 mg/l
15^{th} percentile TSS	=	21.7 mg/l

The discharge flows into an unnamed drainage ditch for over two miles before entering Bayou DuLac. Therefore, the water quality within the drainage ditch shall be protected. Therefore, for permit limitation calculations, the default low flow values of 0.1 cfs and 1.0 cfs shall be utilized as the 7Q10 and harmonic mean flow, respectively.

If you have additional questions or comments, please contact me at 2-3138.

wqsmodn.wk4 Date: 03/02 Appendix B-1 Page 1
Developer: Bruce Fielding Time: 02:20 PM
Software: Lotus 4.0 LA0020257; AI 19907
Revision date: 03/11/09

Water Quality Screen for City of Bunkie/City of Bunkie WWTP

Input variables:

Receiving Water Characteristics:

Receiving Water Name=	Bayou Dulac
Critical flow (Qr) cfs=	0.1
Harm. mean/avg tidal cfs=	1
Drinking Water=1 HHNPCR=2	
MW=1, BW=2, 0=n	
Rec. Water Hardness=	118.8
Rec. Water TSS=	21.7
Fisch/Specific=1,Stream=0	
Diffuser Ratio=	

Effluent Characteristics:

Permittee=	City of Bunkie Wastewater Treatment Plant
Permit Number=	LA0020257; AI 19907
Facility flow (Qef),MGD=	1
Outfall Number =	001
Eff. data, 2=lbs/day	
MQL, 2=lbs/day	
Effluent Hardness=	N/A
Effluent TSS=	N/A
WQBL ind. 0=y, 1=n	
Acute/Chr. ratio 0=n, 1=y	
Aquatic,acute only1=y,0=n	
Page Numbering/Labeling	
Appendix	Appendix B-1
Page Numbers 1=y, 0=n	1
Input Page # 1=y, 0=n	1

Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3	
Pipe width, feet	
ZID plume dist., feet	
MZ plume dist., feet	
HHnc plume dist., feet	
HHc plume dist., feet	

Fischer/site specific dilutions:

Dilution =	---
F/specific MZ Dilution =	---
F/specific HHnc Dilution=	---
F/specific HHc Dilution=	---

Dilution:

ZID Fs =	0.1
MZ Fs =	1
Critical Qr (MGD)=	0.06463
Harm. Mean (MGD)=	0.6463
ZID Dilution =	0.9935785
MZ Dilution =	0.9392935
HHnc Dilution=	0.9392935
HHc Dilution=	0.6074227
ZID Upstream =	0.006463
MZ Upstream =	0.06463
MZhhnc Upstream=	0.06463
MZhhc Upstream=	0.6463
ZID Hardness=	---
MZ Hardness=	---
ZID TSS=	---
MZ TSS=	---

Multipliers:

WLAa --> LTAa	0.32
WLAc --> LTAc	0.53
LTA a,c-->WQBL avg	1.31
LTA a,c-->WQBL max	3.11
LTA h --> WQBL max	2.38
WQBL-limit/report	2.13
WLA Fraction	1
WQBL Fraction	1

Conversions:

ug/L-->lbs/day Qef	0.00834
ug/L-->lbs/day Qeo	0
ug/L-->lbs/day Qr	0.000834
lbs/day-->ug/L Qeo	119.90408
lbs/day-->ug/L Qef	119.90408
diss-->tot 1=y0=n	1
Cu diss->tot1=y0=n	1
cfs-->MGD	0.6463

Receiving Stream:

Default Hardness=	25
Default TSS=	10
99 Crit., 1=y, 0=n	1
Old MQL=1, New=0	1

Toxicity Dilution Series:

Biomonitoring dilution:	0.9392935
Dilution Series Factor:	0.75

	Percent Effluent
Dilution No. 1	93.929%
Dilution No. 2	70.4470%
Dilution No. 3	52.8353%
Dilution No. 4	39.6264%
Dilution No. 5	29.7198%

Partition Coefficients; Dissolved-->Total

METALS	FW
Total Arsenic	2.1017559
Total Cadmium	3.6811445
Chromium III	5.1676521
Chromium VI	1
Total Copper	3.3147968
Total Lead	6.1814341
Total Mercury	2.8849231
Total Nickel	2.840237
Total Zinc	4.1466463

Aquatic Life, Dissolved
Metal Criteria, ug/L

METALS	ACUTE	CHRONIC
Arsenic	339.8	150
Cadmium	38.331093	1.1710223
Chromium III	631.88755	204.97779
Chromium VI	15.712	10.582
Copper	21.673348	14.232124
Lead	77.865154	3.0342933
Mercury	1.734	0.012
Nickel	1637.4795	181.85523
Zinc	132.43348	120.93185

Site Specific Multiplier Values:

CV =	---
N =	---
WLAa --> LTAa	---
WLAc --> LTAc	---
LTA a,c-->WQBL avg	---
LTA a,c-->WQBL max	---
LTA h --> WQBL max	---

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	Instream	/Tech	/Tech		1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)		0=95 %	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)		12.4		5	0	26.412	700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			714.17664	315.26338		
Total Cadmium				1			141.10229	4.3107025		
Chromium III				10			3265.375	1059.2535		
Chromium VI				10			15.712	10.582		
Total Copper		14		10	0	29.82	71.842744	47.1766		
Total Lead				5			481.31832	18.756284		
Total Mercury				0.2			5.0024566	0.0346191		
Total Nickel				40			4650.8298	516.51195		
Total Zinc		30		20	0	63.9	549.15481	501.46162		
Total Cyanide				20			45.9	5.4	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-05					7.2E-07	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform		74.9		10	0	159.537	2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-ethane				10			932	466	1.8	C

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City of Bunkie Wastewater Treatment Plant

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(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHNDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHNDW	(*18) Limiting A,C,HH	(*19) WQBL Avg 001	(*20) WQBL Max 001	(*21) WQBL Avg 001	(*22) WQBL Max 001	(*23) Need WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	704.5241	372.6205	53.2315	225.44771	197.48887	53.2315	53.2315	53.2315	126.69097	0.4439507	1.0566027	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	385.47533	204.40896	---	123.35211	108.33675	---	108.33675	141.92114	336.92729	1.1836223	2.8099736	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	718.79236	335.63885	---	230.01356	177.88859	---	177.88859	233.03405	553.23352	1.943504	4.6139675	no
Total Cadmium	142.01424	4.5893032	---	45.444556	2.4323307	---	2.4323307	3.1863532	7.5645485	0.0265742	0.0630883	no
Chromium III	3286.4791	1127.7135	---	1051.6733	597.68814	---	597.68814	782.97147	1858.8101	6.529982	15.502476	no
Chromium VI	15.813547	11.265915	---	5.0603349	5.9709348	---	5.0603349	6.6290388	15.737642	0.0552862	0.1312519	no
Total Copper	72.307064	50.225624	---	23.13826	26.619581	---	23.13826	30.311121	71.95999	0.2527947	0.6001463	no
Total Lead	484.42908	19.968502	---	155.01731	10.583306	---	10.583306	13.864131	32.914083	0.1156269	0.2745034	no
Total Mercury	5.0347875	0.0368565	---	1.611132	0.0195339	---	0.0195339	0.0255895	0.0607506	0.0002134	0.0005067	no
Total Nickel	4680.8881	549.89412	---	1497.8842	291.44388	---	291.44388	381.79149	906.39048	3.184141	7.5592966	no
Total Zinc	552.704	533.87108	---	176.86528	282.95167	---	176.86528	231.69352	550.05102	1.9323239	4.5874255	no
Total Cyanide	46.196652	5.749002	13674.108	14.782929	3.0469711	13674.108	3.0469711	3.9915321	9.47608	0.0332894	0.0790305	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	1.185E-06	---	---	1.185E-06	1.185E-06	1.185E-06	2.821E-06	9.886E-09	2.353E-08	no
VOLATILE COMPOUNDS												
Benzene	2263.5353	1197.7088	20.57875	724.33129	634.78564	20.57875	20.57875	20.57875	48.977425	0.1716268	0.4084717	no
Bromoform	2948.9366	1559.683	57.12661	943.65971	826.63196	57.12661	57.12661	57.12661	135.96133	0.4764359	1.1339175	no
Bromodichloromethane	---	---	5.43279	---	---	5.43279	5.43279	5.43279	12.93004	0.0453095	0.1078365	no
Carbon Tetrachloride	2747.644	1453.22	1.97556	879.24608	770.20657	1.97556	1.97556	1.97556	4.7018328	0.0164762	0.0392133	no
Chloroform	2908.6781	1538.3904	115.241	930.77698	815.34689	115.241	115.241	115.241	274.27358	0.9611099	2.2874417	yes
Dibromochloromethane	---	---	8.363204	---	---	8.363204	8.363204	8.363204	19.904426	0.0697491	0.1660029	no
1,2-Dichloroethane	11876.263	6281.317	11.19484	3800.4043	3329.098	11.19484	11.19484	11.19484	26.643719	0.093365	0.2222086	no
1,1-Dichloroethylene	1167.4971	617.4854	0.954854	373.59907	327.26726	0.954854	0.954854	0.954854	2.2725525	0.0079635	0.0189531	no
1,3-Dichloropropylene	609.91658	322.58289	173.31112	195.1733	170.96893	173.31112	170.96893	223.9693	531.71338	1.867904	4.4344896	no
Ethylbenzene	3220.6816	1703.408	8623.503	1030.6181	902.80624	8623.503	902.80624	1182.6762	2807.7274	9.8635193	23.416447	no
Methyl Chloride	55355.465	29277.325	---	17713.749	15516.982	---	15516.982	20327.247	48257.815	169.52924	402.47018	no
Methylene Chloride	19424.736	10273.68	143.2281	6215.9155	5445.0501	143.2281	143.2281	143.2281	340.08288	1.1945224	2.8429632	no
1,1,2,2-Tetrachloro-ethane	938.02352	496.11758	2.96334	300.16753	262.94232	2.96334	2.96334	2.96334	7.0527492	0.0247143	0.0588199	no

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	Cu	Effluent	Effluent	MQL	Effluent	95th %	Numerical Criteria			HH
Parameters	Instream	/Tech	/Tech		1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)		0=95 %	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane										
(gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
							2	0.014		
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Col.(col/100ml)										
Chlorine				100			19	11		
Ammonia		500			0	1065		4000		
Chlorides										
Sulfates										
TDS										

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(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAa	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
								001	001	001	001	
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1298.3373	686.68635	4.11575	415.46793	363.94377	4.11575	4.11575	4.11575	9.795485	0.0343254	0.0816943	no
Toluene	1278.208	676.04005	49185.906	409.02656	358.30123	49185.906	358.30123	469.37461	1114.3168	3.9145842	9.2934022	no
1,1,1-Trichloroethane	5314.1246	2810.6232	---	1700.5199	1489.6303	---	1489.6303	1951.4157	4632.7502	16.274807	38.637137	no
1,1,2-Trichloroethane	1811.6334	958.167	11.35947	579.72269	507.82851	11.35947	11.35947	11.35947	27.035539	0.094738	0.2254764	no
Trichloroethylene	3925.2057	2076.0285	34.5723	1256.0658	1100.2951	34.5723	34.5723	34.5723	82.282074	0.288333	0.6862325	no
Vinyl Chloride	---	---	58.93754	---	---	58.93754	58.93754	58.93754	140.27135	0.4915391	1.169863	no
ACID COMPOUNDS												
2-Chlorophenol	259.66745	137.33727	134.56923	83.093585	72.788753	134.56923	72.788753	95.353267	226.37302	0.7952462	1.887951	no
2,4-Dichlorophenol	203.30553	107.52763	247.63294	65.057768	56.989644	247.63294	56.989644	74.656434	177.23779	0.6226347	1.4781632	no
BASE NEUTRAL COMPOUNDS												
Benzidine	251.61575	133.07875	0.0002799	80.51704	70.531738	0.0002799	0.0002799	0.0002799	0.0006661	2.334E-06	5.555E-06	no
Hexachlorobenzene	---	---	0.0004116	---	---	0.0004116	0.0004116	0.0004116	0.0009795	3.433E-06	8.169E-06	no
Hexachlorabutadiene	5.1329613	1.0859226	0.181093	1.6425476	0.575539	0.181093	0.181093	0.181093	0.4310013	0.0015103	0.0035946	no
PESTICIDES												
Aldrin	3.019389	---	0.0006585	0.9662045	---	0.0006585	0.0006585	0.0006585	0.0015673	5.492E-06	1.307E-05	no
Hexachlorocyclohexane (gamma BHC, Lindane)	5.3342539	0.2235723	0.32926	1.7069612	0.1184933	0.32926	0.1184933	0.1552262	0.3685142	0.0012946	0.0030734	no
Chlordane	2.4155112	0.0045779	0.0003128	0.7729636	0.0024263	0.0003128	0.0003128	0.0003128	0.0007445	2.609E-06	6.209E-06	no
4,4'-DDT	1.1071093	0.0010646	0.0003128	0.354275	0.0005643	0.0003128	0.0003128	0.0003128	0.0007445	2.609E-06	6.209E-06	no
4,4'-DDE	52.839308	11.178615	0.0003128	16.908578	5.924666	0.0003128	0.0003128	0.0003128	0.0007445	2.609E-06	6.209E-06	no
4,4'-DDD	0.0301939	0.0063878	0.0004445	0.009662	0.0033855	0.0004445	0.0004445	0.0004445	0.0010579	3.707E-06	8.823E-06	no
Dieldrin	0.2389343	0.0592999	8.232E-05	0.076459	0.0314289	8.232E-05	8.232E-05	8.232E-05	0.0001959	6.865E-07	1.634E-06	no
Endosulfan	0.2214219	0.0596193	0.6813632	0.070855	0.0315982	0.6813632	0.0315982	0.0413937	0.0982705	0.0003452	0.0008196	no
Endrin	0.0869584	0.0399236	0.2768038	0.0278267	0.0211595	0.2768038	0.0211595	0.027719	0.0658061	0.0002312	0.0005488	no
Heptachlor	0.5233608	0.0040456	0.0001152	0.1674754	0.0021442	0.0001152	0.0001152	0.0001152	0.0002743	9.611E-07	2.287E-06	no
Toxaphene	0.734718	0.0002129	0.0003951	0.2351098	0.0001129	0.0003951	0.0001129	0.0001478	0.000351	1.233E-06	2.927E-06	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	19.122797	11.71093	---	6.119295	6.2067929	---	6.119295	8.0162765	19.031008	0.0668557	0.1587186	no
Ammonia	---	4258.52	---	---	2257.0156	---	2257.0156	2956.6904	7019.3185	24.658798	58.541116	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX B-2, LA0020257, AI No. 19907

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Bayou Dulac
Critical Flow, Qrc (cfs): 0.1
Harmonic Mean Flow, Qrh (cfs): 1.0
Segment No.: 060212
Receiving Stream Hardness (mg/L): 118.8
Receiving Stream TSS (mg/L): 21.7
MZ Stream Factor, Fs: 1
Plume distance, Pf: N/A

Effluent Characteristics:

Company: City of Bunkie/City of Bunkie WWTP
Facility flow, Qe (MGD): 1
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0020257

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):
Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{*}}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2*}}{2.38\ Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present

on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.

Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \underline{(Fs \times Qrc \times 0.6463 \times Cu)}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting

Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

COLOR

PRETREATMENT EVALUATION AND RECOMMENDATION

FACILITY NAME: *City of Bunkie WWTP*

CITY: *Bunkie*

PARISH: *Avoyelles*

PERMIT #: *LA0020257*

DESIGN FLOW: *1.0 MGD*

ESTIMATED OR EXPECTED TREATED WASTEWATER FLOW: *0.50 MGD*

OTHER POTWs IN SYSTEM: *N/A*

INDUSTRIES LISTED IN MANUFACTURERS GUIDE AND/OR LPDES PERMIT APPLICATION:

Industry Name	Type of Industry	Direct or Indirect Discharger
Bunkie Record Newspaper	Newspaper publisher	Indirect [1]
Kojis & Sons Inc.	Manufactures neon signs; sign installation and maintenance contractor	N/A [2]
Louisiana Hoop Co. Inc.	Manufactures wooden pallets; manufactures hardwood furniture dimension stock	Indirect [3]
O'Leary Brothers Signs	Manufactures fiberglass and plastic combination awnings; manufactures signs and advertising specialties	N/A [4]
Signs Etc.	Manufactures signs and advertising specialties	N/A [2]

STANDARD LANGUAGE RECOMMENDATION AND JUSTIFICATION:

Due to the absence of pretreatment categorical standards for the indirect discharges listed above or because the discharge is of sanitary wastewater only, it is recommended that LDEQ Option 1 Pretreatment Language be included in LPDES Permit LA0020257. This language is established for municipalities that do not have either an approved or required Pretreatment program. This recommendation is in accordance with 40 CFR Part 403 regulations, the General Pretreatment Regulations for Existing and New Sources of Pollution contained in LAC Title 33, Part IX, Chapter 61 and the Best Professional Judgement (BPJ) of the reviewer.

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[1] The discharge to the City of Bunkie WWTP is sanitary only. Newspapers are not printed at this location.
[2] This facility is outside of the City of Bunkie limits and is not connected to the WWTP.
[3] The discharge is sanitary wastewater only.
[4] This facility is not connected to the City of Bunkie WWTP.

FRESHWATER CHRONIC

BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: **LA0020257**
Facility Name: **City of Bunkie/City of Bunkie WWTP**
Previous Critical Biomonitoring Dilution: **98%**
Proposed Critical Dilution Biomonitoring: **94% (WET limit)**
Design Capacity: **1.0 MGD**
Receiving stream 7Q10: **0.1 cfs**
Date of Review: **12/17/09**
Name of Reviewer: **Laura Thompson**

Recommended Frequency by Species:

***Pimephales promelas* (Fathead minnow):** **Once / Quarter**[1]
***Ceriodaphnia dubia* (water flea):** **Once / Quarter**[1]

Recommended Dilution Series: **30%, 40%, 53%, 70%, and 94%**

Number of Tests Performed during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow):** **21**
***Daphnia pulex* (water flea):** **N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea):** **25**

Number of Failed Tests during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow):** **1 lethal, 1 sub-lethal**
***Daphnia pulex* (water flea):** **N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea):** **3 lethal, 9 sub-lethal**

Failed Test Dates during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow):** **Testing dates of: 1/1/06-3/31/06 (lethal & sub-lethal)**
***Daphnia pulex* (water flea):** **N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea):** **Testing dates of: 7/1/05-9/30/05 (sub-lethal); 10/1/05-12/31/05 (sub-lethal); 1/1/06-3/31/06 (lethal & sub-lethal); 7/1/06-9/30/06 (sub-lethal); 10/1/06-12/31/06 (lethal & sub-lethal); 7/1/07-9/30/07 (lethal & sub-lethal); 7/1/07-9/30/07 (sub-**

[1] This facility will have a three year compliance schedule to meet toxicity testing requirements implemented into the permit renewal. The biomonitoring frequency shall be quarterly for the life of the permit.

lethal); 7/1/08-9/30/08 (sub-lethal); 10/1/08-12/31/08 (sub-lethal);

Previous TRE Activities: **N/A – No previous TRE Activities**

Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

The City of Bunkie/City of Bunkie WWTP, owns and operates an existing publicly owned treatment works serving the City of Bunkie in Bunkie, Avoyelles Parish, Louisiana. LPDES Permit LA0020257, effective February 1, 2005, contained freshwater chronic biomonitoring as an effluent characteristic of Outfall 001 for *Ceriodaphnia dubia* and *Pimephales promelas*. The effluent series consisted of 31%, 41%, 55%, 73%, and 98% concentrations, with the critical dilution being defined as the 98% effluent concentration. The testing was to be performed quarterly. Data on file indicate that the permittee has experienced 3 lethal and 9 sub-lethal failures to the *Ceriodaphnia dubia* and 1 lethal and 3 sub-lethal failures to the *Pimephales promelas* during the last five years.

This facility has experienced several lethal and sub-lethal biomonitoring test failures during the previous permit cycle. A reasonable potential analysis also shows that reasonable potential for future lethal and/or sub-lethal toxicity exists for the City of Bunkie/City of Bunkie WWTP. LDEQ does not recommend a Whole Effluent Toxicity (WET) Limit be implemented immediately upon permit reissuance. Rather, LDEQ recommends that a three year compliance schedule be incorporated into LA0020257. The purpose of this compliance schedule is to attain compliance with the WET limit. After this three year period expires, the WET limit stated in Part I of LA0020257 shall become effective.

It is recommended that freshwater chronic biomonitoring be an effluent characteristic of Outfall 001 (discharge of 1.0 mgd of treated sanitary wastewater) in LA0020257. The effluent dilution series shall be 30%, 40%, 53%, 70%, and 94% concentrations, with 94% being defined as the critical biomonitoring dilution and/or WET limit. The biomonitoring frequency shall be once per quarter for *Ceriodaphnia dubia* and *Pimephales promelas* for the term of the permit.

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan Volume 3. Version 6 (April 16, 2008), and the Best Professional Judgment (BPJ) of the reviewer.

Reasonable Potential Analysis for WET

Facility Name: City of Bunkie/City of Bunkie WWTP
Type of Testing: Chronic Freshwater
LPDES Permit Number: LA0020257 Outfall number: 1
Proposed Critical Dilution: 94 * Critical Dilution in draft permit, do not use % sign.

Test Data Enter data in yellow shaded cells only. Fifty percent should be entered as 50.

	Vertebrate				Invertebrate			
Date (dd/mm/yy)	Lethal NOEC	Sublethal NOEC	Lethal TU	Sublethal TU	Lethal NOEC	Sublethal NOEC	Lethal TU	Sublethal TU
1/1/05-3/31/05	100	100	1.00	1.00	100	100	1.00	1.00
4/1/05-6/30/05	100	100	1.00	1.00	100	100	1.00	1.00
7/1/05-9/30/05	100	100	1.00	1.00	100	**56**	1.00	**1.79**
10/1/05-12/31/05	100	100	1.00	1.00	100	**32**	1.00	**3.13**
1/1/06-3/31/06	**56**	**56**	**1.79**	**1.79**	**30**	**30**	**3.33**	**3.33**
3/1/06-3/31/06	100	100	1.00	1.00				
4/1/06-4/30/06	100	100	1.00	1.00	100	100	1.00	1.00
5/1/06-5/31/06					100	100	1.00	1.00
4/1/06-6/30/06	100	100	1.00	1.00	100	100	1.00	1.00
7/1/06-9/30/06	100	100	1.00	1.00	100	**75**	1.00	**1.33**
10/1/06-12/31/06	100	100	1.00	1.00	**30**	**30**	**3.33**	**3.33**
1/1/07-3/31/07	100	100	1.00	1.00	100	100	1.00	1.00
4/1/07-6/30/07	100	100	1.00	1.00	100	100	1.00	1.00
7/1/07-9/30/07	100	100	1.00	1.00	**42**	**42**	**2.38**	**2.38**
7/1/07-9/30/07					98	98	1.02	1.02
7/1/07-9/30/07					100	**30**	1.00	**3.33**
10/1/07-12/31/07	98	98	1.02	1.02	98	98	1.02	1.02
1/1/08-3/31/08	98	98	1.02	1.02	98	98	1.02	1.02
4/1/08-6/30/08	98	98	1.02	1.02	98	98	1.02	1.02
7/1/08-9/30/08	98	98	1.02	1.02	98	**73**	1.02	**1.37**
7/1/08-9/30/08					98	98	1.02	1.02
8/1/08-10/31/08					98	98	1.02	1.02
10/1/08-12/31/08	98	98	1.02	1.02	98	**73**	1.02	**1.37**
1/1/09-3/31/09	98	98	1.02	1.02	98	98	1.02	1.02
4/1/09-6/30/09	98	98	1.02	1.02	98	98	1.02	1.02
7/1/09-9/30/09	98	98	1.02	1.02	98	98	1.02	1.02

Reasonable Potential Analysis for WET

Facility Name: City of Bunkie/City of Bunkie WWTP
Type of Testing: Chronic Freshwater
LPDES Permit Number: LA0020257 Outfall number: 1
Proposed Critical Dilution: 94 * Critical Dilution in draft permit, do not use % sign.

Test Data Enter data in yellow shaded cells only. Fifty percent should be entered as 50.

	Vertebrate				Invertebrate			
Date (dd/mm/yy)	Lethal NOEC	Sublethal NOEC	Lethal TU	Sublethal TU	Lethal NOEC	Sublethal NOEC	Lethal TU	Sublethal TU
Min NOEC Observed	56	56			30	30		
TU at Min Observed			1.79	1.79			3.33	3.33
		Count	21	21		Count	25	25
		Mean	1.045	1.045		Mean	1.251	1.502
		Std. Dev.	0.170	0.170		Std. Dev.	0.684	0.853
		CV	0.2	0.2		CV	0.5	0.6
		RPMF	1.1	1.1			1.1	1.1

	1.000	Reasonable Potential Acceptance Criteria.
Vertebrate Lethal	1.846	Reasonable Potential exists, Permit requires WET monitoring and WET limi
Vertebrate Sublethal	1.846	Reasonable Potential exists, Permit requires WET monitoring and WET limi
Invertebrate Lethal	3.447	Reasonable Potential exists, Permit requires WET monitoring and WET limi
Invertebrate Sublethal	3.447	Reasonable Potential exists, Permit requires WET monitoring and WET limi

NOTES:

Where toxicity was so great in a test that all effluent dilutions failed and the NOEC was reported as zero percent effluent dilution ("0"), the Reasonable Potential calculation was performed substituting the next lower whole number of the lowest concentration of effluent tested ("30"). This results in the introduction of some bias in the permittee's favor.